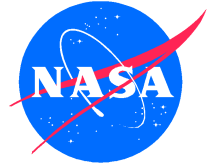


# GLENNAN MICROSYSTEMS INITIATIVE



## TECHNOLOGY

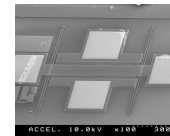
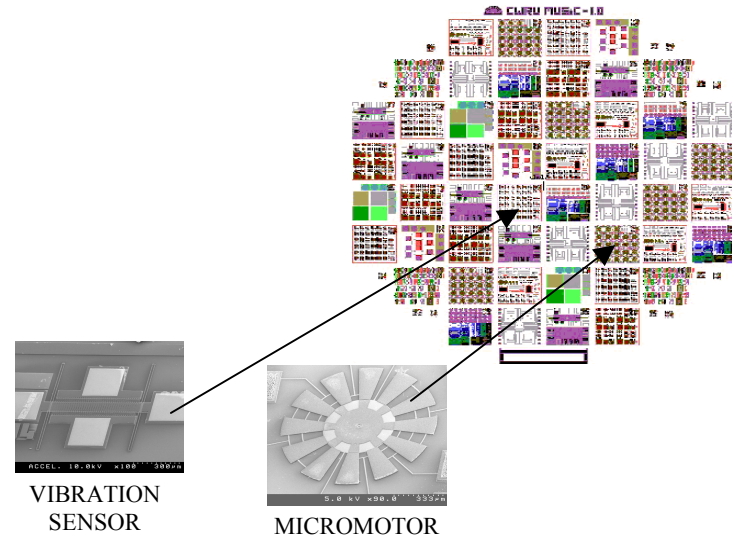
MicroElectroMechanical Systems revolutionize product design by introducing low-cost manufacture for distributed systems. MEMS for harsh environments are robust devices built on silicon carbide wafers able to withstand high temperatures and caustic environments.

## COMMERCIAL APPLICATION

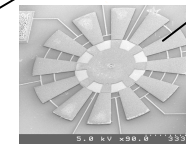
- ◆ Chemical sensor array to measure combustion elements such as oxygen, CO and NO<sub>x</sub> emissions.
- ◆ Pressure sensor for use at high temperatures-600C.
- ◆ Multi-user manufacturing process to provide SiC MEMS devices economically.
- ◆ Catheter based visualization and drug delivery to improve heart-angioplasty procedures.

## SOCIAL / ECONOMIC BENEFIT

- ◆ Stimulate economic development through partnership: 14 companies and 9 governmental/not-for-profit organizations have raised \$26 million to-date.
- ◆ Reduce complexity and eliminate constant servicing currently needed for devices in high temperature, high radiation, caustic, corrosive, high load, or high vibration environments.



VIBRATION  
SENSOR



MICROMOTOR

## NASA APPLICATIONS

- ◆ High temperature electronic nose for safety, health monitoring, and control of aircraft engines.
- ◆ Reduced NO<sub>x</sub> emissions for efficient aircraft engines such as UEET.
- ◆ Silicon carbide electronics for harsh environments, including possible future missions to Venus.



NASA Contact: Larry Viterna  
Glennan Contact: Walt Merrill  
GLITeC Contact: Rick Earles

- ◆ Integrated industry and NASA perspectives
- ◆ Structured agreement for government and industry members
- ◆ Characterizes commercial needs for MEMS and identifies industrial members